

IMB205 Series Intel[®] Socket 1156 Core i7 / Core i5 / Core i3 / Pentium [®] Processor ATX Industrial Motheroard User's Manual



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Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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CHAPTER 1 INTRODUCTION



The IMB205 ATX industrial Motherboard supports LGA1156 socket for Intel® Core i7 / Core i5 / Core i3 / Pentium® processors with 32/45nm technology .The board integrates Intel® Q57 that deliver outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. There are four 240-pin DDR3 DIMM sockets for dual channel architecture DDR3 1066/1333 MHz non-ECC memory, maximum memory capacity up to 16GB. The board also features Gigabit Ethernet, six serial ATA-II ports at maximum transfer rate up to 3 GB/s, and SATA RAID 0/1/5/10 by Q57. Twelve USB 2.0 high speed compliant ports and built-in Intel® HD Audio can achieve the best stability and reliability for industrial applications.

1.1 Specifications

- CPU
 - Intel[®] Core[™]i7 / Core[™]i5 / Core[™]i3 / Pentium [®] processors
 - Support Intel® Turbo Boost Technology(Note 1)
- System Chipset
 - Intel[®] Q57 Express Chipset
- CPU Socket
 - LGA1156 Socket
- BIOS
 - AMI BIOS via 64Mb SPI flash with socket
- System Memory
 - Four 240-pin DDR3 DIMM sockets
 - Maximum up to 16GB DDR3 memory
 - Supports 1066/1333MHz non-ECC memory
- L3 Cache
 - Varies with CPU
- Onboard Multi-I/O
 - Controller: Winbond W83627UHG
 - 4 x Serial Ports: COM 1/2 as double deck D-Sub connectors on the rear I/O and 2x5-pin 2.54 pitch box-header for COM 3/4 ,COM1 support RS-232/422/485 other ports as RS-232 and All ports with +5V/+12V powered
 - 1 x 2x13 Pin 2.54 pitch box-header for Parallel, SPP/EPP/ECP supported
 - 1 x 2x17 Pin 2.54 pitch box-header for FDD

USB Interface

Tweleve USB ports (four on the Rear I/O, eight ports by 2x5-pin 2.54 pin-header)

Onboard Graphics

- Intel[®] Clarkdale integrated Graphics Processing Unit (GPU) processors which goes with Intel® Q57 chipset with VGA,DisplayPort out(Note 2)
- Memory Size -- Intel[®] DVMT supported
- Resolution -- VGA output up to a resolution of 2048x1536 pixels with 32-bit color at 75 Hz and DisplayPort output up to 2560x 1600 at 60 Hz.
- Output Interface -- VGA from DAC output via 15-pin D-Sub connector and DisplayPort from DAC output via DisplayPort connector on the Rear I/O

Ethernet

- LAN1 Intel[®] WG82578DM PHY, supports 10/100/1000 Base-T Gigabit Ethernet, RJ-45 connector on the Rear I/O, with AMT6.0 supported with 5-pin 2.0 pitch wafer for LED
- LAN2 -- Intel[®] WG82574L NIC, supports 10/100/1000 Base-T Gigabit Ethernet, RJ-45 connector on the Rear I/O with 5-pin 2.0 pitch wafer for LED

Serial ATA

 Six Serial ATA-II ports (3 Gb/s performance) and SATARAID 0/1/5/10 by Intel® Q57

Audio

- HD Audio codec Realtek ALC888 for Line/speaker-out & MIC-in on the rear I/O triple deck connector, with LM1877 audio amplifier
- Support Jack-Detection
- Support CD In

Expansion Slot

- 1 x PCI Express2.0 x16 Slot
- 1 x PCI Express x4 Slot
- 2 x PCI Express x1 Slot
- 3 x PCI Slot (32bit/33MHz)

Watchdog Timer

■ Reset Supported (1-255 levels)

SO <u>NOTE</u>

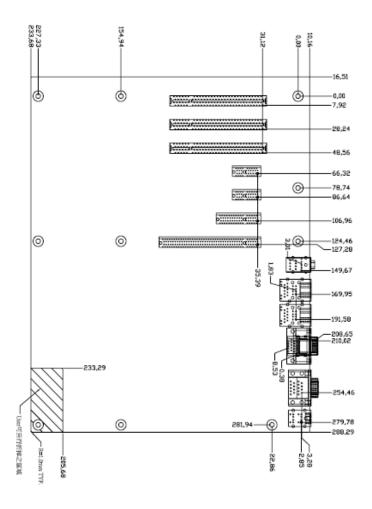
- 1. Intel support Turbo Boost Technology depends on the CPU types.
- 2. When use the onboard DisplayPort and D-Sub ports, you must install an Intel CPU with integrated graphics.
- 3. Due to Windows 32-bit operating system limitation, when more than 4 GB of physical memory is installed, the actual memory size displayed will be less than 4 GB.
- 4. Please load Optimal Defaults after install or uninstall discrete graphics card on PCle x16 slot.

1.2 Utilities Supported

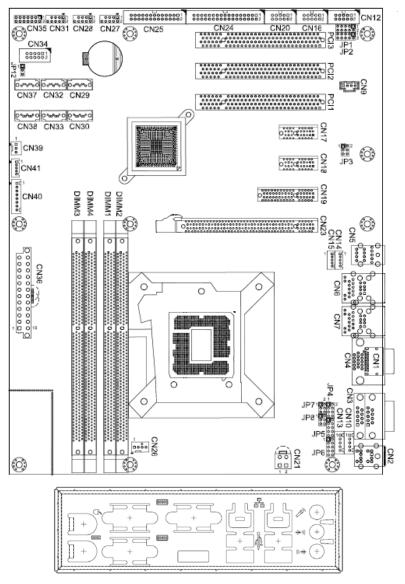
- Intel[®] Chipset Drivers
- Intel[®] Graphics Drivers
- Ethernet Utility and Drivers
- HD Audio Drivers
- RAID Utility
- iAMT Utility and Drivers
- TPM Utility

CHAPTER 2 JUMPERS AND CONNECTORS

2.1 Board Dimensions



2.2 Board Layout



I/O Bracket

2.3 Jumper Settings

Before applying the power to **IMB205** Series, please make sure all jumper settings are defaulted as the following table:

JUMPER	Di	SETTING	
JP1	COM4 Mode	CN16 Pin 1: DCD	Short 7-9
JP1	Select	CN16 Pin 8: RI	Short 8-10
JP2	COM3 Mode	CN12 Pin 1: DCD	Short 7-9
JP2	Select	CN12 Pin 8: RI	Short 8-10
JP3	Audio Line Out/Sp	eaker Out : Line Out	Short 1-3, 2-4
JP4	COM1 Operate Mo	ode Select : RS-232	Short 1-2
JP5	COM1 Mode	CN3A Pin 1: DCD	Short 7-9
JP5	Select	CN3A Pin 9: RI	Short 8-10
JP6	COM2 Mode	CN3B Pin 1: DCD	Short 7-9
JP6	Select	CN3B Pin 9: RI	Short 8-10
JP7	COM1 Operate Mo	Short 3-5,4-6	
JP8	COM1 Operate Mode Select : RS-232		Short 3-5,4-6
JP12	Clear CMOS Settir	Short 1-2	

2.3.1 COM1 Mode Select Jumpers for RS-232/422/485 (JP4, JP7, JP8)

These jumpers select the COM1 port's communication mode to operate RS-232 or RS-422/485.

Description	Function	Jumper Setting			
COM1	RS-232 (Default)	JP4 1	JP7 1	JP8 1	
	RS-422	JP4 1	JP7 1	JP8 1	
	RS-485	JP4 1	JP7 1	JP8 1	

2.3.2 COM1~COM4 Mode Select Jumpers (JP1, JP2, JP5, JP6)

These jumpers select the COM1~COM4 ports' pin-1 to operate DCD with +5V and +12V power, and pin-8 or pin-9 to operate RI with +5V and +12V.

Description	Function	Jumper Setting
COM1 (CN3A)	Pin 1=12V	JP5 1
	Pin 1=5V	JP5 1
	*Pin 1=DCD (Default)	JP5 1
	Pin 9=12V	JP5 1
	Pin 9=5V	JP5 1
	*Pin 9=RI (Default)	JP5 1

Description	Function	lumnar Satting
Description	Function	Jumper Setting
COM2 (CN3B)	Pin 1=12V	JP6 1
	Pin 1=5V	JP6 1
	*Pin 1=DCD (Default)	JP6 1
	Pin 9=12V	JP6 1
	Pin 9=5V	JP6 1
	*Pin 9=RI	JP6
	(Default)	1

Description	Function	Jumper Setting
COM3 (CN12)	Pin 1=12V	JP2 9 7 5 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	Pin 1=5V	JP2 9 7 5 3 1 0 0 0 0 10 8 6 4 2
	*Pin 1=DCD (Default)	JP2 9 7 5 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	Pin 8=12V	JP2 9 7 5 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	Pin 8=5V	JP2 9 7 5 3 1 0 0 0 0 10 8 6 4 2
	*Pin 8=RI (Default)	JP2 9 7 5 3 1 0 0 0 0 10 8 6 4 2

Description	Function	Jumper Setting
COM4 (CN16)	Pin 1=12V	JP1 9 7 5 3 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	Pin 1=5V	JP1 9 7 5 3 1 0 0 0 0 10 8 6 4 2
	*Pin 1=DCD (Default)	JP1 9 7 5 3 1 0 0 0 0 10 8 6 4 2
	Pin 8=12V	JP1 9 7 5 3 1 0 0 0 0 10 8 6 4 2
	Pin 8=5V	JP1 9 7 5 3 1 0 0 0 0 10 8 6 4 2
	*Pin 8=RI (Default)	JP1 9 7 5 3 1 0 0 0 0 10 8 6 4 2

2.3.3 Audio Output Select Jumper (JP3)

This jumper makes the selection of Audio output.

Description	Function	Jumper Setting
Audio Output Selection	Line Out (Default)	JP3 1
	Speak Out(w/ Amplifier)	JP3 1

2.3.4 CMOS Clear Jumper (JP12)

You may need to use this jumper is to clear the CMOS memory if incorrect BIOS settings.

Description	Function	Jumper Setting
CMOS Clear	Normal (Default)	JP12 1
	Clear CMOS	JP12 1

2.4 Connectors

Connectors connect this board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected.

Connector	Label	Connector	Label
Display Port	CN1	ATX 2x2 12V IN	CN21
PS/2 KB/MS Connector	CN2	PCI-E x16 SLOT	CN23
COM1/2 Connector	CN3	Floppy Connector	CN24
VGA Connector	CN4	Print Connector	CN25
HD Audio Connector	CN5	CPU FAN Connector	CN26
LAN2 & USB Port 8/9	CN6	USB Port 2/3 Connector	CN27
LAN1 & USB Port 10/11	CN7	USB Port 6/7 Connector	CN28
CD-IN Connector	CN9	SATA0~5 Connector	CN29,CN30, CN32,CN33, CN37,CN38
Internal Mouse	CN10	USB Port 4/5	CN31
COM3 Connector	CN12	USB Port 0/1	CN34
Internal Keyboard	CN13	Axiomtek Front Panel	CN35
LAN2 Internal LED Connector	CN14	ATX 12x2 Power Connector	CN36
LAN1 Internal LED Connector	CN15	SYSTEM FAN	CN39
COM4 Connector	CN16	Internal Power Connector	CN40
PCI-E x1 SLOT	CN17,CN18	SMBUS Connector	CN41
PCI-E x4 SLOT	CN19	PCI SLOT 1~3	PCI1~3
Digital I/O Connector	CN20	DDR3 Long DIMM Slot	DIMM1~4

2.4.1 DisplayPort Connector (CN1)DisplayPort is a digital display interface standard. This connector is used to connect a monitor with DisplayPort inputs.

Pin	Signal	
1	LANE 0	
2	GND	
3	LANE 0#	
4	LANE 1	
5	GND	
6	LANE 1#	
7	LANE 2	CN1
8	GND	
9	LANE 2#	d 19 1
10	LANE 3	<u> </u>
11	GND	
12	LANE 3#	
13	GND	
14	GND	
15	AUX CH	
16	GND	
17	AUX CH#	
18	Hot Plug Detect	
19	NC	
20	DP_PWR(3.3V)	

2.4.2 PS/2 Keyboard/Mouse Connector (CN2)

The board supports a keyboard and Mouse interface.

Pin	Signal	Pin	Signal	ONO
1	K/B Data	7	M/S Data	CN2
2	NC	8	NC	
3	GND	9	GND	
4	+5V	10	+5V	
5	K/B CLK	11	M/S CLK	
6	NC	12	NC	

2.4.3 COM1/2 Connector (CN3)

CN3 is a double deck D-Sub connector. The upper **CN3A** is a standard 9-pin DB9 connector for the Serial Port1 RS-232(COM1), jumper selectable with the +5V/12V power capability is on DCD and RI, depending on the jumper setting.

Pin	Signal	
1	Data Carrier Detect (DCD)	
2	Receive Data (RXD)	CN3
3	Transmit Data (TXD)	1 5
4	Data Terminal Ready (DTR)	
5	GND	
6	Data Set Ready (DSR)	
7	Request to Send (RTS)	6 9
8	Clear to Send (CTS)	
9	Ring Indicator (RI)	

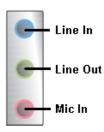
2.4.4 VGA Connector (CN4)

The board supports CRT/ VGA with a 15-pin D-Sub connector for the CRT VGA display.

Pin	Signal	
1	Red	
2	Green	
3	Blue	
4	NC	
5	GND	CN4
6	GND	5 1
7	GND	
8	GND	
9	+5V	1.
10	GND	15 11
11	NC	
12	DDC DATA	
13	Horizontal Sync	
14	Vertical Sync	
15	DDC CLK	

2.4.5 High Definition Audio Jack Connector (CN5)

After installing onboard audio driver, you may connect speaker to Line Out jack, microphone to MIC in jack.



2.4.6 Ethernet with USB Connectors (CN6, CN7)

The board is equipped with two high performance Plug and Play Ethernet interface fully compliant with the IEEE 802.3 standard. To connect the board to 10-Base-T, 100-Base-T or 1000 Base-T hub, just plug one end of cable to the Ethernet connector and connect the other end (phone jack) to a 10-Base-T, 100-Base-T or 1000 Base-T hub.

The lower double-deck USB Connector (**CN6B, CN7B**) supports USB 2.0 compliant (480Mbps) that can be connected to any USB peripherals, such as keyboard, mouse, scanner

LAN LED Indication	Description	CN6A/CN7A
А	Activity Link LED OFF: No Link Blinking: Data Activity	B A 12345678
В	Speed LED OFF:10 Mbps data rate Green: 100 Mbps data rate Orange: 1G Mbps data rate	

Pin	Signal	
1,5	+5V	CN6B
2	USB D8-	
3	USB D8+	5 6 7 8
4,8	GND	1 2 3 4
6	USB D9-	
7	USB D9+	

Pin	Signal	
1,5	+5V	CN7B
2	USB D10-	
3	USB D10+	5 6 7 8
4,8	GND	1 2 3 4
6	USB D11-	
7	USB D11+	

2.4.7 Audio CD-In Connector: CN9

This connector is provided for external audio input.

Pin	Description	
1	CD IN_L	
2	GND	
3	GND	
4	CD IN_R	



2.4.8 Internal Mouse Connector (CN10)

The board provides the Internal Mouse interface with a 5-pin connector

Pin	Signal	CN10
1	Mouse Clock	1 ■ ┌
2	Mouse Data	20
3	NC	3 🗆
4	GND	5 5
5	+5V	

2.4.9 Internal Keyboard Connector (CN13)

The board provides the Internal Keyboard interface with a 5-pin connector

Pin	Signal	CN13
1	Keyboard Clock	1 ■ _
2	Keyboard Data	20
3	NC	3 🗆
4	GND	5 5
5	+5V	

2.4.10 COM3/COM4 Connectors (CN12, CN16)The board has the onboard serial ports COM3, 4 (CN12, CN16), two 2x5-pin 2.54 pitch box-header to support RS-232.

Pin	Signal	Pin	Signal	
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)	
3	Receive Data (RXD)	4	Request to Send (RTS)	CN12/CN16
5	Transmit Data (TXD)	6	Clear to Send (CTS)	10 0 0 0 0 2
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)	
9	GND	10	NC	

LAN1/2 Internal LED Connectors (CN14, CN15) 2.4.11

Pin	Signal	CN14,CN15
1	Activity Link LED(+)	1 ■ ∟
2	Activity Link LED(-)	20
3	100 Mbps Speed LED, Low Active	3 □ 4 □
4	+3.3V	5 4
5	1G Mbps Speed LED, Low Active	

2.4.12 Digital I/O Port (DIO) Connector (CN20)

The board is equipped an 8-channel digital I/O connector **CN20** that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers, sense warning signals from an Uninterrupted Power System (UPS), or perform store security control. The digital I/O is controlled via software programming.

Pin	Signal	Pin	Signal	
1	DIO 6	2	DIO 1	
3	DIO 7	4	DIO 2	CN20
5	DIO 8	6	DIO 3	9 0 0 0 0 1 10 0 0 0 0 2
7	GND	8	DIO 4	
9	GND	10	DIO 5	

2.4.13 ATX 4 Pin 12V in Connector (CN21)

You can connect it to the ATX12V power supply for CPU Core Voltage.

Pin	Signal	CN21
1	GND	
2	GND	3 4
3	+12V	1 2
4	+12V	

2.4.14 Floppy Disk Port Connector (CN24)

The board provides a 34-pin header type connector **CN24** supporting floppy drives. The floppy drives may be any one of the following types: 5.25" 360KB/1.2MB and 3.5" 720KB/1.44MB/2.88MB.

Pin	Signal	Pin	Signal	Pin	Signal	
1	GND	2	Drive Density Select	3	GND	
4	NC	5	GND	6	NC	
7	GND	8	Index#	9	GND	
10	Motor enable A#	11	GND	12	NC	
13	GND	14	Drive Select A#	15	GND	
16	NC	17	GND	18	Direction#	
19	GND	20	STEP#	21	GND	
22	Write Data#	23	GND	24	Write Gate#	
25	GND	26	Track 0 #	27	GND	
28	Write Protect#	29	NC	30	Read Data#	
31	GND	32	Head Selection#	33	NC	
34	Disk Change#					
CN24						
000000000000000000000000000000000000000						

2.4.15 Print Port Connector (CN25)

Print Port Connector

This board has a multi-mode parallel port to support the following modes:

1. Standard Mode

IBM PC/XT, PC/AT and PS/ 2^{TM} are compatible with bi-directional parallel port.

2. Enhanced Mode

Enhanced parallel port (EPP) is compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant).

3. High Speed Mode

Microsoft and Hewlett Packard extended capabilities port (ECP) is IEEE 1284 compliant.

Pin	Signal	Pin	Signal			
1	Strobe#	2	Auto Form Feed#			
3	Data 0	4	Error#			
5	Data 1	6	Initialize#			
7	Data 2	8	Printer Select In#			
9	Data 3	10	GND			
11	Data 4	12	GND			
13	Data 5	14	GND			
15	Data 6	16	GND			
17	Data 7	18	GND			
19	Acknowledge#	20	GND			
21	Busy	22	GND			
23	Paper Empty#	24	GND			
25	Printer Select	26	NC			
	CN25					

2.4.16 CPU Fan Connector (CN26)

A CPU fan is always needed for cooling CPU heat. The CPU fan connector provides power to the CPU fan.

Pin	Signal	
1	GND	CN26
2	+12V	0000
3	Rotation Detection	4 1
4	Speed Control	

2.4.17 USB Connectors (CN27, CN28, CN31, CN34)

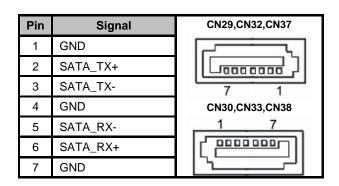
The 10-pin standard Universal Serial Bus (USB) connectors, CN27/29/33/45, on this board are for installing versatile USB interface peripherals.

Pin	Signal	Pin	Signal	
1	USB +5V	2	USB +5V	CN34
3	USB D0-	4	USB D1-	9 0 0 0 1
5	USB D0+	6	USB D1+	10 0 0 0 0 2
7	GND	8	GND	
9	GND	10	GND	

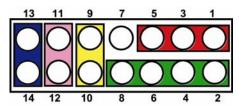
Pin	Signal	Pin	Signal	
1	USB +5V	2	USB +5V	CN27,CN28,CN31
3	USB DX-	4	USB DY-	
5	USB DX+	6	USB DY+	
7	GND	8	GND	10 2
		10	GND	

2.4.18 SATA Connectors (CN29, CN30, CN32, CN33, CN37, CN38)

These SATA connectors are for high-speed SATA interface ports and they can be connected to hard disk devices.



2.4.19 Front Panel Connector (CN35)



■ Power LED

This 3-pin connector, designated at *Pins 1* and *5* of *CN35*, connects the system power LED indicator to its respective switch on the case. *Pin 1* is +, and *pin 5* is assigned as -. The Power LED lights up when the system is powered ON. *Pin 3* is defined as GND.

■ External Speaker and Internal Buzzer Connector

Pins 2, 4, 6, and **8 of CN35** connect to the case-mounted speaker unit or internal buzzer. When connecting to an internal buzzer and **Short pin2 and pin4**. When connecting an external speaker, set these jumpers to **Open** and install the speaker cable on **pin 8** (+) and **pin 2** (-).

■ ATX Power On/Off Button

This 2-pin connector, designated at **Pins 9** and **10** of **CN35**, connects the power button of the front panel to the **IMB205** - allowing user to control the power on/off state of the power supply.

■ System Reset Switch

Pins 11 and **12** of **CN35** connect to the case-mounted reset switch and allow rebooting of your computer instead of turning OFF the power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply.

■ HDD Activity LED

This connector extends to the hard drive activity LED on the control panel. This LED will flash when the HDD is being accessed. *Pins 13* and *14 of CN35* connect the hard disk drive and the front panel HDD LED. *Pins 13* is -, and *pin 14* is assigned as +.

2.4.20 ATX Power Connector (CN36)

Steady and sufficient power can be supplied to all components on the board by connecting the power connector. Please make sure all components and devices are properly installed before connecting the power connector. If you use a 24-pin ATX power supply, please remove the small cover from the power connector before plugging in the power cord, otherwise, please do not remove it.

Pin	Signal	Pin	Signal	CN36
1	3.3V	13	3.3V	5.150
2	3.3V	14	-12V	12 0 0 24
3	GND	15	GND	
4	+5V	16	PS_ON	
5	GND	17	GND	
6	+5V	18	GND	
7	GND	19	GND	
8	PWR OK	20	-5V	
9	5VSB	21	+5V	
10	+12V	22	+5V	
11	+12V	23	+5V	1 13
12	3.3V	24	GND	

2.4.21 System Fan Connector (CN39)

The System fan connector provides power to the System fan.

Pin	Description	CN39
1	GND	n = 1
2	+12V	0 3
3	Sensor	

2.4.22 Internal power Connector: CN40

This connector CN40 is for support power.

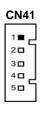
Pin	Description
1	+12V
2	-12V
3	+5V
4	-5V
5	3,3V
6	5VSB
7	GND
8	GND



2.4.23 SMBUS Connector: CN41

This connector CN41 is for SMBUS interface support.

Pin	Description
1	SMB_CLOCK
2	NC
3	GND
4	SMB_DATA
5	+5V



2.4.24 PCI Slots

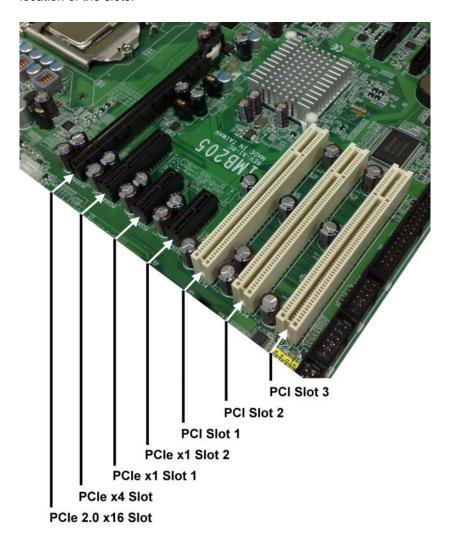
The PCI Slots support cards such as a LAN card, SCSI card, USB card and other cards that comply with PCI specifications. Refer to the figure delow for the location of the slots.

2.4.25 PCI Express x1, x4 Slots

This motherboard supports PCI Express x1, x4 network card, SCSI card other cards that comply with the PCI Express specifications. Refer to the figure delow for the location of the slots.

2.4.26 PCI Express x16 Slot

This motherboard supports PCI Express x16 2.0 graphic cards comply with the PCI Express specifications. Refer to the figure delow for the location of the slots.



CHAPTER 3 HARDWARE INSTALLATION

Before installing the processor, please access $Intel^{\textcircled{\$}}$ website for more detailed information $\underline{http://www.intel.com}$.

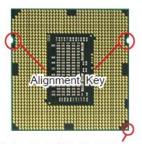
3.1 Installing the Processor



Before installing the CPU, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the CPU.

Introduction to LGA1156 CPU

The pin-pad side of LGA1156 CPU The pin-pad side of LGA1156 CPU



Yellow triangle is the Pin 1 indicator

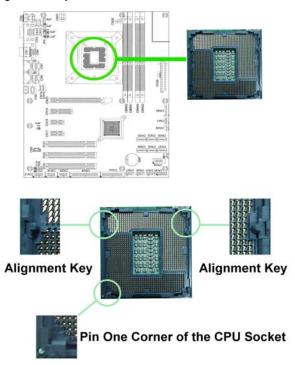


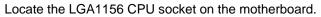
Yellow triangle is the Pin 1 indicator

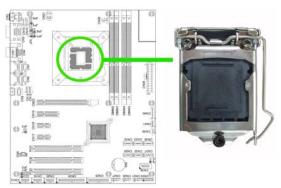
Introduction to LGA1156 CPU socket



Locate the alignment keys on the motherboard CPU socket.

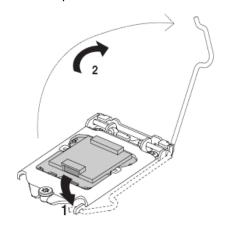




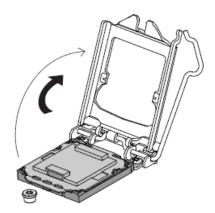


Follow the steps below to correctly install the CPU into the motherboard CPU socket.

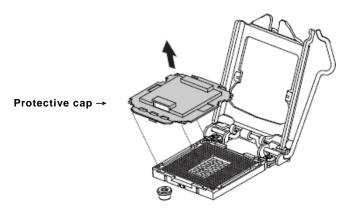
 Press the load lever of LGA1156 CPU socket with your thumb and then move it sideways until it is released from the retention tab, then lift the load lever up.



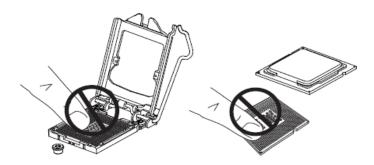
2. Lift the load lever in the direction of the arrow until load plate is completely lifted.



 Remove the protective cap from the CPU socket. The cap is used to protect the CPU socket against dust and harmful particles.
 Remove the protective cap only when you are about to install the CPU.



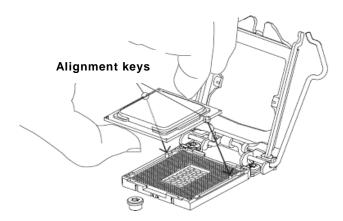
4. Be careful not touch pin-pad of CPU and pin of CPU socket.



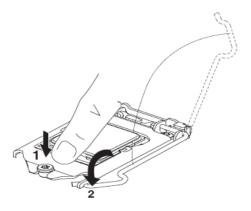
 Insert the CPU into the CPU socket. The yellow triangular mark on the CPU must align with the bottom left corner of the CPU socket. Note that the alignment keys are matched. Visually inspect if the CPU is seated well into the socket. If not, take out the CPU with pure vertical motion and reinstall.

NOTE

The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!



6. Close the load plate, and then push down the load lever, ensuring that the front edge of the load plate slides under the shoulder screw(1), insert the load lever under the retention tab(2).

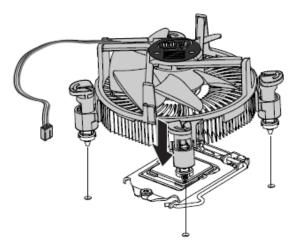


3.1.1 Installing the heatsink and fan

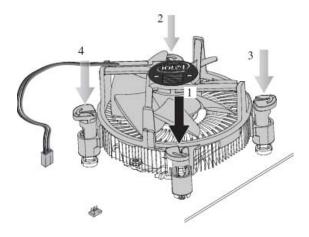


When you buy a boxed Intel® processor, the package includes the CPU fan and heatsink assembly. If you purchased a separate CPU, ensure that you only use Intel® -certified heatsink and fan.

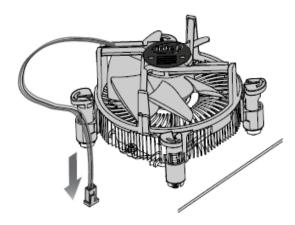
1. Place the heatsink on top of the installed CPU, ensuring that the four fasteners match the holds on the motherboard.



2. Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.

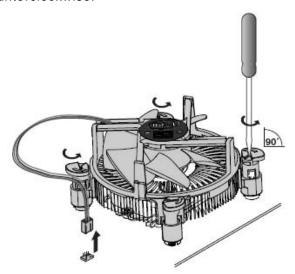


3. Make sure the CPU fan cable is plugged to the CPU fan connector (CN26) on the motherboard.

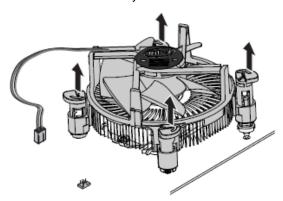


3.1.2 Uninstalling the heatsink and fan

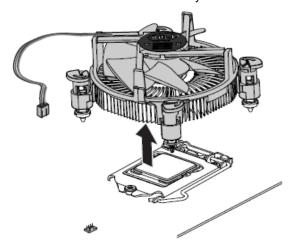
Disconnect the CPU fan cable from the CPU fan connector (CN26) on the motherboard then rotate each fastener counterclockwise.



1. Pull up two fasteners at a time in a diagonal sequence to disengage the heatsink and fan assembly from the motherboard.



2. Remove the heatsink and fan assembly from the motherboard.



3.2 Installing the Memory

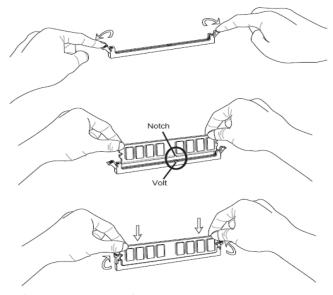
The board supports four 240-pin DDR3 DIMM memory sockets with maximum memory capacity up to 16GB.



A DDR3 module has the same physical dimensions as a DDR2 DIMM but is notched differently to prevent installation on a DDR2 DIMM socket.

Please follow steps below to install the memory modules:

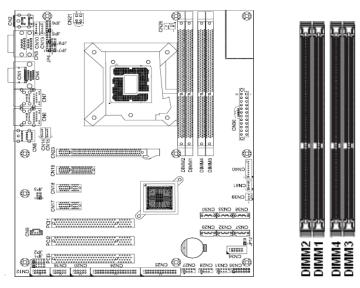
- 1 Push down latches on each side of the DIMM socket.
- Align the memory module with the socket that notches of memory module must match the socket keys for a correct installation.
- Install the memory module into the socket and push it firmly down until it is fully seated. The socket latches are levered upwards and clipped on to the edges of the DIMM.
- 4 Install any remaining DIMM modules.



3.2.1 Daul Channel Memory Configurtion

This motherboard provides four DDR3 memory sockets and support Daul Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory enabling Dual Channel memory sockets are divided into two channels and each channel has two memory sockets as following:

◆Channel 0 : DIMM1, DIMM3 ◆Channel 1 : DIMM2, DIMM4



Due to CPU limitations, read the following guidelines before installing the memory in Dual Channel mode.

- 1. Dual Channel mode cannot be enabled if only one DDR3 memory module is installed.
- When enabling Dual Channel mode with two or four memory modules, it is recommended that memory of the same capacity, brand, speed, and chips are used for optimum performance. When enabling Dual Channel mode with two memory modules, be sure to install them in DIMM1 and DIMM3 sockets.

CHAPTER 4

HARDWARE DESCRIPTION

4.1 Microprocessors

The IMB205 Series supports Intel® Core™i7 / Core™i5 / Core™i3 / Pentium® processors, which make your system operated under Windows® XP, Windows® Vista, Windows® 7 and Linux environments. The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

4.2 BIOS

The **IMB205** Series uses AMI Plug and Play BIOS with a single 64Mbit SPI Flash.

4.3 System Memory

The **IMB205** Series supports four 240-pin DDR3 DIMM sockets for a maximum memory of 16GB DDR3 SDRAMs. The memory module can come in sizes of 1GB, 2GB and 4GB.

4.4 I/O Port Address Map

Intel[®] Core[™]i7 / Core [™]i5 / Core [™]i3 / Pentium [®] processors can communicate via I/O ports. There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

```
[00000000 - 0000000F] Direct memory access controller
[00000000 - 00000CF7] PCI bus
[00000010 - 0000001F] Motherboard resources
[00000020 - 00000021] Programmable interrupt controller
[00000022 - 0000003F] Motherboard resources
[00000040 - 00000043] System timer
[00000044 - 0000005F] Motherboard resources
[00000060 - 00000060] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061] System speaker
[00000062 - 00000063] Motherboard resources
[00000064 - 00000064] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006F] Motherboard resources
[00000070 - 00000071] System CMOS/real time clock
[00000072 - 0000007F] Motherboard resources
[00000080 - 00000080] Motherboard resources
[00000081 - 00000083] Direct memory access controller
[00000084 - 00000086] Motherboard resources
[00000087 - 00000087] Direct memory access controller
[00000088 - 00000088] Motherboard resources
[00000089 - 0000008B] Direct memory access controller
[0000008C - 0000008E] Motherboard resources
[0000008F - 0000008F] Direct memory access controller
[00000090 - 0000009F] Motherboard resources
[000000A0 - 000000A1] Programmable interrupt controller
[000000A2 - 000000BF] Motherboard resources
[000000C0 - 000000DF] Direct memory access controller
[000000E0 - 000000EF] Motherboard resources
[000000F0 - 000000FF] Numeric data processor
[00000170 - 00000177] Secondary IDE Channel
[000001F0 - 000001F7] Primary IDE Channel
[00000274 - 00000277] ISAPNP Read Data Port
[00000279 - 00000279] ISAPNP Read Data Port
[000002E8 - 000002EF] Communications Port (COM3)
[000002F8 - 000002FF] Communications Port (COM2)
[00000376 - 00000376] Secondary IDE Channel
[00000378 - 0000037F] Printer Port (LPT1)
[000003B0 - 000003BB] Intel(R) Graphics Media Accelerator HD
[000003C0 - 000003DF] Intel(R) Graphics Media Accelerator HD
[000003E8 - 000003EF] Communications Port (COM4)
[000003F0 - 000003F5] Standard floppy disk controller
[000003F6 - 000003F6] Primary IDE Channel
[000003F7 - 000003F7] Standard floppy disk controller
[000003F8 - 000003FF] Communications Port (COM1)
```

4.5 Interrupt Controller (IRQ) Map

The **IMB205** Series is a 100% PC compatible control board. It consists of 16 interrupt request lines, and four out of them can be programmable. The mapping list of the 16 interrupt request lines is shown as the following table.

IRQ	Parity check error
IRQ0	System timer
IRQ1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Communication Port (COM2)
IRQ4	Communication Port (COM1)
IRQ5	PCI Device Share
IRQ7	Parallel port
IRQ8	System CMOS/real time clock
IRQ9	Microsoft ACPI-Compliant System
IRQ10	PCI Device Share
IRQ11	PCI Device Share
IRQ12	Microsoft PS/2 Mouse
IRQ13	Numeric data processor
IRQ14	Primary IDE Channel
IRQ15	Secondary IDE Channel

CHAPTER 5 AMI BIOS SETUP UTILITY

This chapter provides users with detailed description how to set up basic system configuration through the AMIBIOS8 BIOS setup utility.

5.1 Starting

To enter the setup screens, follow the steps below:

- 1. Turn on the computer and press the key immediately.
- 2. After you press the <Delete> key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Chipset and Power menus.

5.2 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

These keys include <F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, and so on.

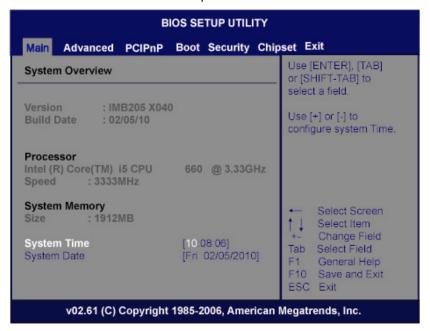
<u>NOTE</u> Some of navigation keys differ from one screen to another.

← Left/Right	The Left <arrow> keys allow you to select a setup screen.</arrow>
↑↓ Up/Down	The Up and Down <arrow> keys allow you to select a setup screen or sub-screen.</arrow>
+- Plus/Minus	The Plus and Minus <arrow> keys allow you to change the field value of a particular setup item.</arrow>
Tab	The <tab> key allows you to select setup fields.</tab>
F1	The <f1> key allows you to display the General Help screen.</f1>
F10	The <f10> key allows you to save any changes you have made and exit Setup. Press the <f10> key to save your changes.</f10></f10>
Esc	The <esc> key allows you to discard any changes you have made and exit the Setup. Press the <esc> key to exit the setup without saving your changes.</esc></esc>
Enter	The <enter> key allows you to display or change the setup option listed for a particular setup item. The <enter> key can also allow you to display the setup subscreens.</enter></enter>

AMI Bios Setup Utility

5.3 Main Menu

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



System Time/Date

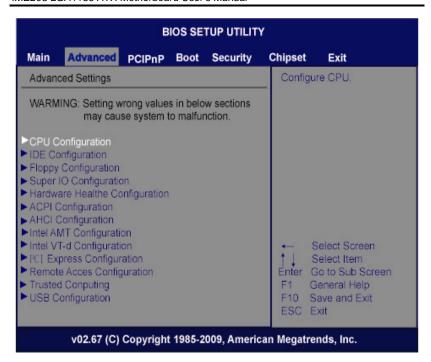
Use this option to change the system time and date. Highlight *System Time* or *System Date* using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

5.4 Advanced Menu

The Advanced menu allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus:

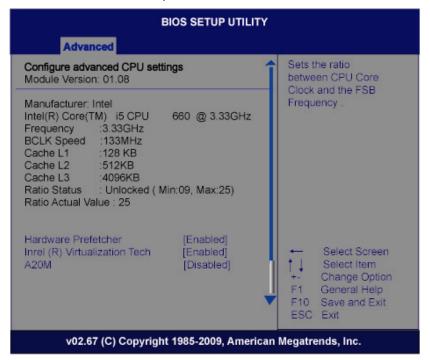
- CPU Configuration
- IDE Configuration
- Floppy Configuration
- Super IO Configuration
- Hardware Health Configuration
- ACPI Configuration
- AHCI Configuration
- Intel AMT Configuration
- Intel VT-d Configuration
- PCI Express Configuration
- Remote Acces Configuration
- Trusted Computing
- USB Configuration

For items marked with "▶", please press <Enter> for more options.



• CPU Configuration

This screen shows the CPU Configuration, and you can change the value of the selected option.



> Hardware Prefetcher

You can let the processor fetches data and instructions from the memory into the caches that are likely to be required in the near future. This reduces the latency associated with memory reads.

> Intel® Virtualization Tech

Allows a hardware platform to run multiple operating systems separately and simultaneously, enabling one system to virtually function as several systems.

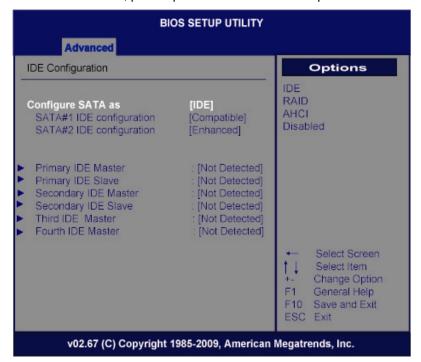
> A20N

Allow Legacy OSes to be compatible with APs.

AMI Bios Setup Utility

• IDE Configuration

You can use this screen to select options for the IDE Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "▶", please press <Enter> for more options.



> SATA#1 IDE Configuration

Use this item to control the onboard SATA controller. Here are the options for your selection, *Compatible*, *Enhanced*.

> SATA#2 IDE Configuration

Use this item to control the onboard SATA controller. Here are the options for your selection, *Enhanced* and *Disabled*.

> Primary/Secondary IDE Master/Slave

Select one of the hard disk drives to configure IDE devices installed in the system by pressing <Enter> for more options.

> Third IDE Master

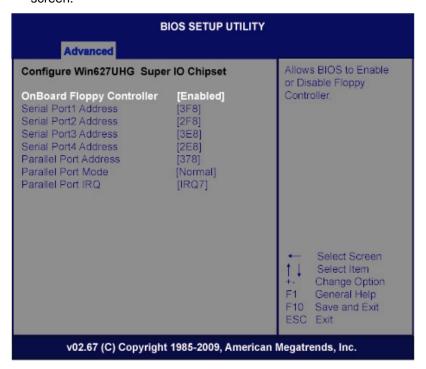
Select one of the hard disk drives to configure IDE devices installed in the system by pressing <Enter> for more options.

> Fourth IDE Master

Select one of the hard disk drives to configure IDE devices installed in the system by pressing <Enter> for more options.

SuperIO Configuration

You can use this screen to select options for the SuperIO Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



Serial Port1 Address

This option specifies the base I/O port address and Default setting is 3F8

> Serial Port2 Address

This option specifies the base I/O port address and Default setting is 2F8.

> Serial Port3 Address

This option specifies the base I/O port address and Default setting is 3E8

> Serial Port4 Address

This option specifies the base I/O port address and Default setting is 2E8

Parallel Port Address

This item allows you to determine the I/O address for onboard parallel port. There are several options for your selection.

• Parallel Port Mode

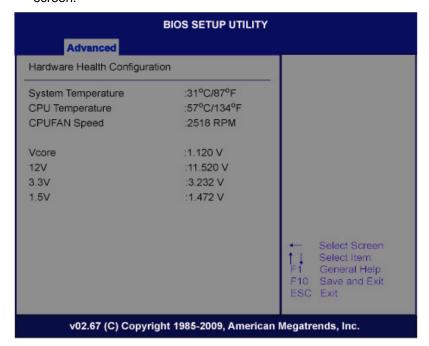
Select an operating mode for the onboard parallel (printer) port.

Parallel Port IRQ

Use this item to setting the IRQ for onboard parallel port

Hardware Health Configuration

This screen shows the Hardware Health Configuration, and a description of the selected item appears on the right side of the screen.

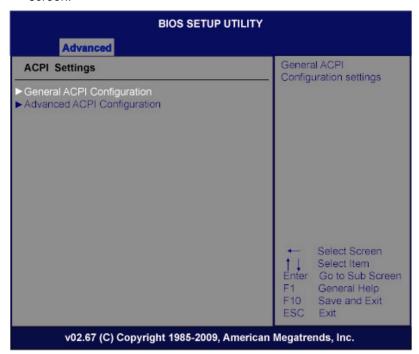


> H/W Health Configuration

This screen displays the temperature of CPU and System, Fan Speed, Vcore, etc.

ACPI Configuration

You can use this screen to select options for the ACPI Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



> General ACPI Configuration

Scroll to this item and press <Enter> to view the General ACPI Configuration sub menu, which contains General ACPI (Advanced Configuration and Power Management Interface) options for your configuration.

General ACPI Configuration/Suspend mode Allow you to select the Advanced Configuration and Power Interface (ACPI) state to be used for system suspend. Here are the options for your selection, S1 (POS), S3 (STR) and Auto.

AMI Bios Setup Utility

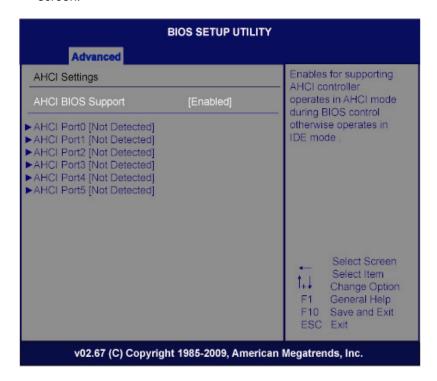
> Advanced ACPI Configuration

Scroll to this item and press <Enter> to view the Advanced ACPI Configuration sub menu, which contains Advanced ACPI (Advanced Configuration and Power Management Interface) options for your configuration.

- Advanced ACPI Configuration/ACPI Version Features
 Allow you to select Version for the Advanced Configuration
 and Power Interface (ACPI). Here are the options for your
 selection, ACPI v1.0, ACPI v2.0 and ACPI v3.0.
- Advanced ACPI Configuration/ACPI APIC support
 Allows you to Enabled or Disabled the Advanced
 Configuration and Power Interface (ACPI) support in the
 Application-Specific Integrated Circuit (ASIC). When set to
 Enabled, the ACPI APIC table pointer is included in the
 RSDT pointer list.

AHCI Configuration

You can use this screen to select options for the AHCI Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

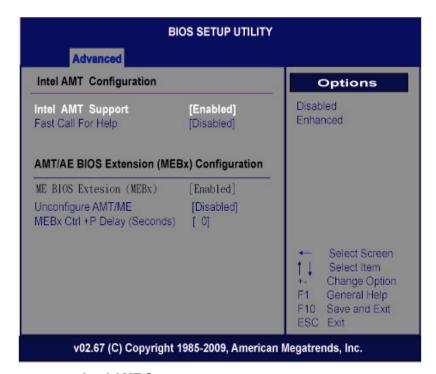


> AHCI BIOS Support

You can enable or disable this item to control the AHCI function of the SATA controller.

Intel AMT Configuration

You can use this screen to select options for the Intel AMT Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



> Intel AMT Support

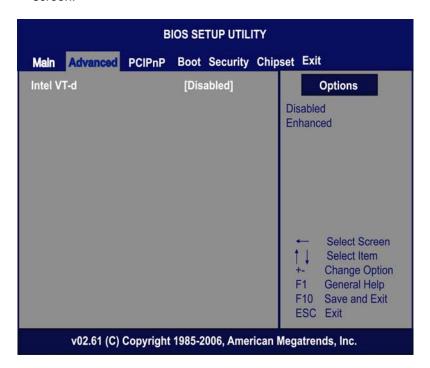
You can enable this item to support AMT (active management technology) function to follow up the procedure for the access to AMI program screen.

Unconfigure AMT/ME

Use this item to unconfigure the AMT/ME settings.

Intel VT-d Configuration

You can use this screen to select options for the Intel VT-d Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



> Intel VT-d

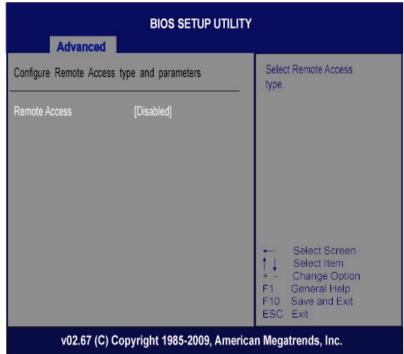
Virtualization Technology for Directed I/O (VT-d) extends Virtualization Technology (VT) roadmap, by providing hardware assists for virtualization solution.

VT-d can help end users improve security and reliability of the systems and also improve performance of I/O devices in virtualized environment. Here are the options for your selection, *Disabled* and *Enabled*.

AMI Bios Setup Utility

Remote Access Configuration

You can use this screen to select options for the Remote Access Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

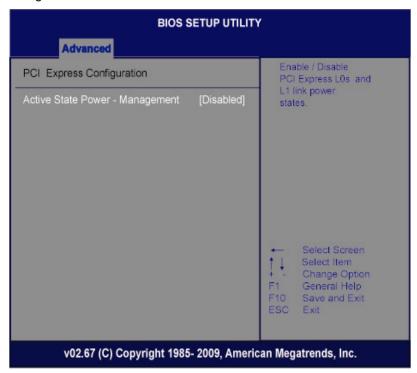


> Remote Access

Use this item to enable or disable the Remote Access function.

PCI Express Configuration

This screen shows the PCI Express Configuration, and you can change its value. A description of the selected item appears on the right side of the screen.



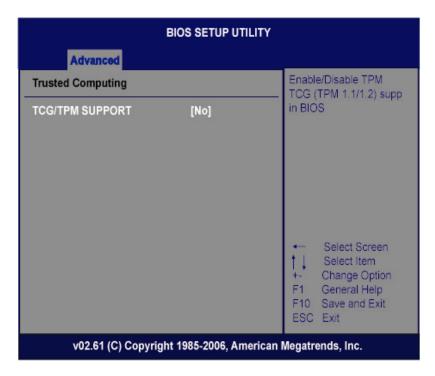
> Active State Power-Management

Use this item to enable or disable the function of Active State Power-Management to provide you with lower power consumption. The default setting is *Disabled*.

AMI Bios Setup Utility

Trusted Computing

You can use this screen to select options for the Trusted Computing, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

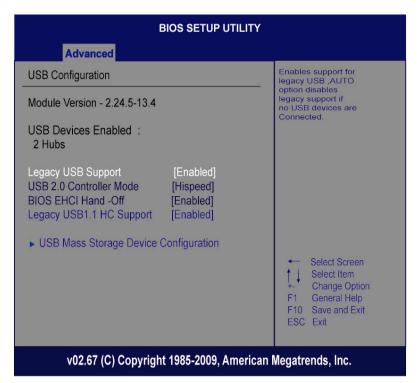


> TCG/TPM SUPPORT

Use this item to control the Trusted Platform Module (TPM) function and Default setting is *No*.

USB Configuration

You can use this screen to select options for the USB Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



Legacy USB Support

Use this item to enable or disable support for USB device on legacy operating system. The default setting is *Enabled*.

USB 2.0 Controller Mode

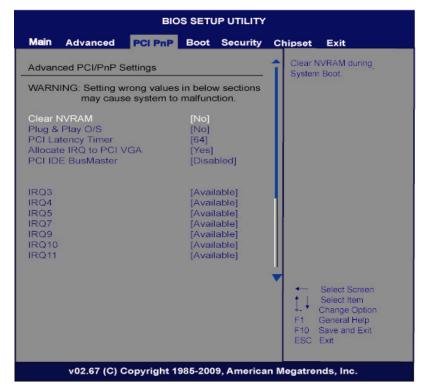
Use this item to configure the USB 2.0 controller. The default setting is *HiSpeed*.

> BIOS EHCI Hand-Off

Enabling this item provide the support for operating systems without an EHCI hand-off feature. The default setting is *enabled*.

5.5 PCI PnP Menu

The PCI PnP menu allows users to change the advanced settings for PCI/PnP devices.



Clear NVRAM

Use this item to clear the data in the NVRAM (CMOS). Here are the options for your selection, *No* and *Yes*.

> Plug & Play O/S

When the setting is No, Use this item to configure all the devices in the system. When the setting is yes and if you install a Plug and Play operating system, the operating system configures the Plug and Play devices not required for boot. The default setting is *No*.

> PCI Latency Timer

This item controls how long a PCI device can hold the PCI bus before another takes over. The longer the latency, the longer the PCI device can retain control of the bus before handing it over to another PCI device. There are several options for your selection.

> Allocate IRQ to PCI VGA

This item allows BIOS to choose an IRQ to assign for the PCI VGA card. Here are the options for your selection, *No* and *Yes*.

> PCI IDE BusMaster

This item is a toggle for the built-in driver that allows the onboard IDE controller to perform DMA (Direct Memory Access) transfer. Here are the options for your selection, *Disabled* and *Enabled*.

> IRQ3/4/5/7/9/10/11/14/15

These items will allow you to assign each system interrupt a type, depending on the type of device using the interrupt. The option "Available" means the IRQ is going to assign automatically. Here are the options for your selection, *Available* and *Reserved*.

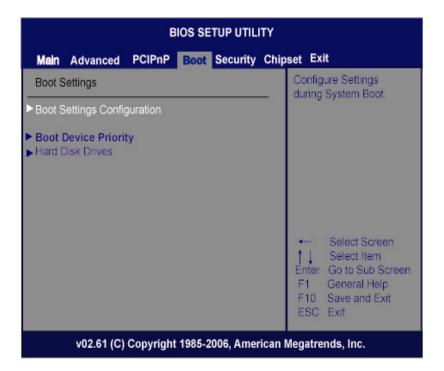
AMI Bios Setup Utility

5.6 Boot Menu

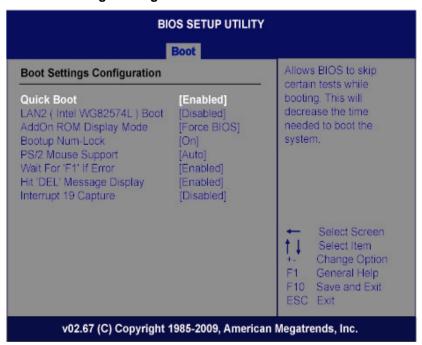
The Boot menu allows users to change boot options of the system. You can select any of the items in the left frame of the screen to go to the sub menus:

- Boot Settings Configuration
- Boot Device Priority
- Hard Disk Drives

For items marked with "▶", please press <Enter> for more options.



Boot Settings Configuration



Quick Boot

Enabling this item lets the BIOS skip certain tests while booting. The default setting is *Enabled*.

> AddOn ROM Display Mode

This item selects the display mode for option ROM. The default setting is *Force BIOS*.

Boot Num-Lock

Use this item to select the power-on state for the NumLock. The default setting is *On*.

> PS/2 Mouse Support

This item determines if the BIOS should reserve IRQ12 for the PS/2 mouse or allow other devices to make use of this IRQ. Here are the options for your selection, *Auto*, *Enabled* and *Disabled*.

AMI Bios Setup Utility

Wait For 'F1' Of Error

If this item is enabled, the system waits for the F1 key to be pressed when error occurs. The default setting is *Enabled*.

Hit 'DEL' Message Display

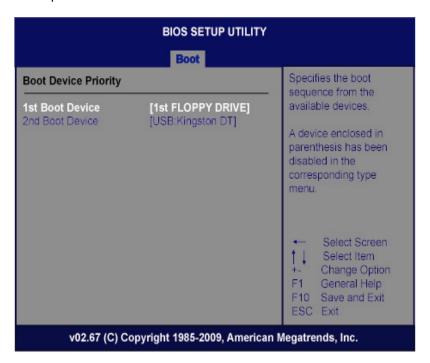
If this item is enabled, the system displays the message "Press DEL to run Setup" during POST. The default setting is *Enabled*.

> Interrupt 19 Capture

If this item is enabled, this function makes the option ROMs to trap Interrupt 19. The default setting is *Disabled*.

Boot Device Priority

The Boot Device Priority screen specifies the boot device priority sequence from the available devices.



5.7 Security Menu

The Security menu allows users to change the security settings for the system.



> Supervisor Password

This item indicates whether a supervisor password has been set. If the password has been installed, Installed displays. If not, Not Installed displays.

User Password

This item indicates whether a user password has been set. If the password has been installed, Installed displays. If not, Not Installed displays.

> Change Supervisor Password

Select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

Change User Password

Select this option and press <Enter> to access the sub menu. You can use the sub menu to change the user password.

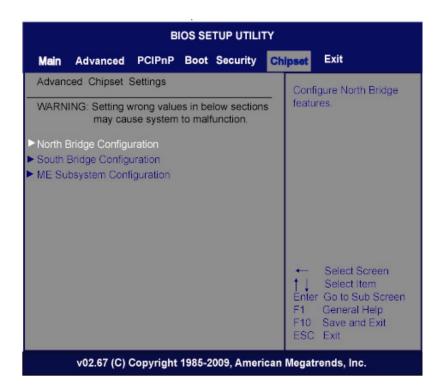
AMI Bios Setup Utility

5.8 Chipset Menu

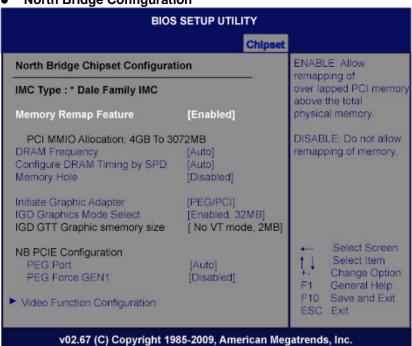
The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:

- North Bridge Configuration
- South Bridge Configuration
- ME Subsystem Configuration

For items marked with "▶", please press <Enter> for more options.







> Memory Remap Feature

Use this item to enable or disable the remapping of the overlapped PCI memory above the total physical memory. Only 64-bit OS supports this function.

> DRAM Frequency

This item allows you to control the Memory Clock.

> Configure DRAM Timing by SPD

This item can enable or disable DRAM timing by SPD (Serial Presence Detect) device, which is a small EEPROM chip on the memory module, containing important information about the module speed, size, addressing mode and various parameters.

AMI Bios Setup Utility

Memory Hole

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved it cannot be cached. Check the user information of peripherals that need to use this area of system memory for the memory requirements. Here are the options, *Disabled* and *15M-16M*.

> Initiate Graphic Adapter

When using multiple graphics cards, this item can select which graphics controller to be the primary display device during boot.

> IGD Graphics Mode Select

This item allows you to select the amount of system memory used by the internal graphics device.

> NB PCIE Configuration/PEG Port

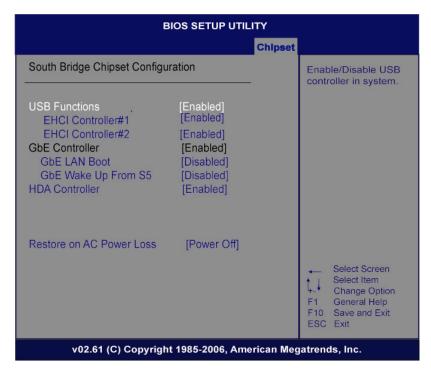
This item is a toggle to enable or disable the PCI Express port. Here are the options for your selection, *Auto* and *Disabled*.

> NB PCIE Configuration/PEG Force GNE1

Some non-graphics PCI-E devices may not follow PCI-E Spec. and may incorrectly report their Gen capability or link width.

Video Function Configuration/DVMT/FIXED Memory Allow you to allocate a fixed amount of system memory as graphics memory. Here are the options for your selection, 128MB, 256MB and Maximum DVMT.

• South Bridge Configuration



USB Functions

This item allows you to enabled or disabled USB functions.

> GbE LAN Boot

This item allows you to enabled or disabled Intel® WG82578DM LAN Boot ROM.

> GbE Wake Up From S5

This item specifies whether the system will be awakened from the S5 power.

> HDA Controller

This item allows you to enable or disabled the HD audio support.

AMI Bios Setup Utility

> Restore on AC Power Loss

This item can control how the PC will behave once power is restored following a power outage, or other unexpected shutdown.

ME Subsystem Configuration

It is strongly recommended that you do not modify these options unless you are an advanced user.



> ME HECI Configuration/ME-HECI

Host Embedded Communication Interface (HECI) provides an interface for the exchange of message between the host software and the ME firmware. Here are the options for your selection, *Disabled and Enabled*.

> ME HECI Configuration/ME-IDER

Allows you to enable or disable the IDE Redirection interface by which the remote management console is able to direct the client PC to boot. Here are the options for your selection, *Disabled and Enabled*.

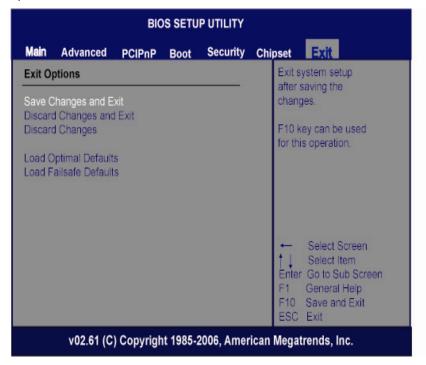
AMI Bios Setup Utility

> ME HECI Configuration/ME-KT

When set to [Enabled], the KT function helps redirect keyboard and POST message to the remote management console and thus facilitates the control of the client machine through the network. Here are the options for your selection, *Disabled and Enabled*.

5.9 Exit Menu

The Exit menu allows users to load your system configuration with optimal or failsafe default values.



Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select *Save Changes and Exit* from the Exit menu and press <Enter>. Select Ok to save changes and exit.

> Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration. Select *Discard Changes and Exit* from the Exit menu and press <Enter>. Select Ok to discard changes and exit.

AMI Bios Setup Utility

> Load Optimal Defaults

It automatically sets all Setup options to a complete set of default settings when you select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems. Select Load Optimal Defaults from the Exit menu and press <Enter>.

> Load Fail-Safe Defaults

It automatically sets all Setup options to a complete set of default settings when you select this option. The Fail-Safe settings are designed for maximum system stability, but not maximum performance. Select the Fail-Safe Setup options if your computer is experiencing system configuration problems.

Select Load Fail-Safe Defaults from the Exit menu and press <Enter>. Select Ok to load Fail-Safe defaults.

APPENDIX A WATCHDOG TIMER

Watchdog Timer Setting

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

Using the Watchdog Function

```
Start
Un-Lock WDT:
                         O 2E 87 ; Un-lock super I/O
                         O 2E 87 ; Un-lock super I/O
Select Logic device:
                         O 2E 07
                         O 2F 08
Activate WDT:
                         O 2E 30
                         O 2F 01
Set Second or Minute:
                         O 2E F5
                         O 2F N
                                     N=00 or 08 (Note#)
Set base timer:
                        O 2E F6
                        O 2F M=00, 01, 02,...FF(Hex) ,Value=0 to 255
WDT counting re-set timer:
                        O 2E F6
                        O 2F M; M=00, 01, 02,...FF
; IF to disable WDT:
                        O 2E 30
                        O 2F 00; Can be disable at any time
```

Watchdog Timer 83

- Timeout Value Range
 - 1 to 255
 - Minute / Second

Program Example

grani Example	
2E, 87	
2E, 87	
2E, 07	
2F, 08	Logical Device 8
2E, 30	Activate
2F, 01	
2E, F5	
2F, N	Set Minute or Second
	N=08 (Min),00(Sec)
2E, F6	
2F, M	Set Value
	M = 00 ~ FF

Note#:

N=00

M= 00h: Time-out Disable

01h: Time-out occurs after 1 second 02h: Time-out occurs after 2 second 03h: Time-out occurs after 3 second

FFh: Time-out occurs after 255 second

N=08

M= 00h: Time-out Disable

01h: Time-out occurs after 1 minute 02h: Time-out occurs after 2 minutes 03h: Time-out occurs after 3 minutes

FFh: Time-out occurs after 255 minutes

84 Watchdog Timer

APPENDIX B

Digital I/O

Using the Digital Output Function

O 2E 87

O 2E 87

O 2E 07

O 2F 08

O 2E 30

O 2F 02 Setting DIO is active

O 2E E0

O 2F 00 00: The respective DIO is programmed as an Output port

O 2E E1

O 2F NN NN: Setting Output value

Example NN=01 representative Output value is "00000001", DIO1 is Output high the rest DIO2~DIO8 all Output low.

Using the Digital Input Function

O 2E 87

O 2E 87

O 2E 07

O 2F 08

O 2E 30

O 2F 02 Setting DIO is active

O 2E E0

O 2F FF FF: The respective DIO is programmed as an Input port

O 2E E1

I 2F Read Input value

APPENDIX C CONFIGURING SATA FOR RAID FUNCTION

Configuring SATA Hard Drive(s) for RAID Function

Please follow up the steps below to configure SATA hard drive(s):

- (1) Install SATA hard drive(s) in your system.
- (2) Enter the BIOS Setup to configure SATA controller mode and boot sequence.
- (3) Configure RAID by the RAID BIOS.
- (4) Install the SATA controller driver during the OS installation.

Before you begin the SATA configuration, please prepare:

- (a) Two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity). If you do not want to create RAID with the SATA controller, you may prepare only one hard drive.
- (b) An empty formatted floppy disk
- (c) Windows XP setup disk

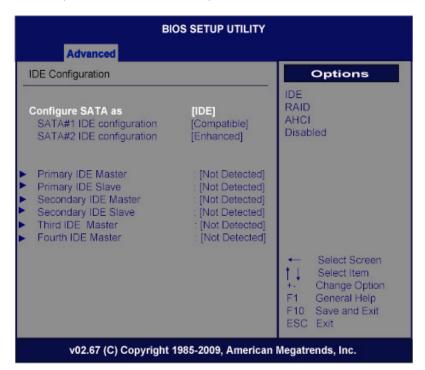
(1) Installing SATA hard drive(s) in your system

Connect one end of the SATA signal cable to the rear of the SATA hard drive, and the other end to available SATA port(s) on the board. Then, connect the power connector of power supply to the hard drive.

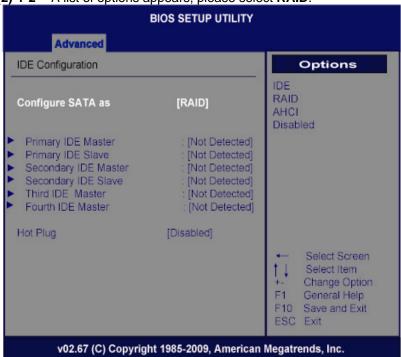
(2) Configuring SATA controller mode and boot sequence by the BIOS Setup

You have to make sure whether the SATA controller is configured correctly by system BIOS Setup and set up BIOS boot sequence for the SATA hard drive(s).

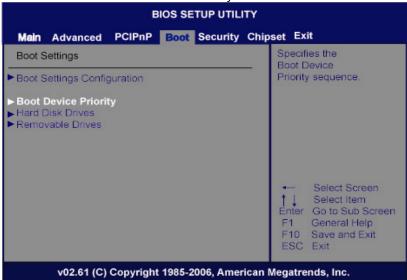
(2)-1-1 Turn on your system, and then press the Del button to enter BIOS Setup during running POST (Power-On Self Test). If you want to create RAID, just go to the Advanced Settings menu/IDE configuration, select the **Configure SATA as**, and press <Enter> for more options.

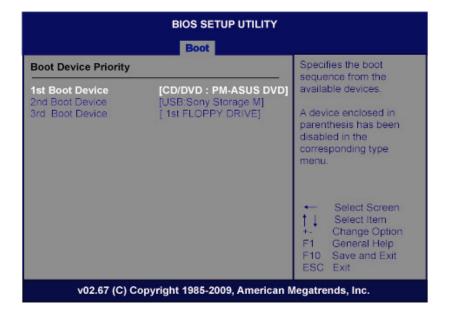


(2)-1-2 A list of options appears, please select RAID.



(2)-2 Set CDROM for First Boot Device under the Boot Settings menu to boot CD-ROM after system restarts.





(2)-3 Save and exit the BIOS Setup.

(3) Configuring RAID by the RAID BIOS

Enter the RAID BIOS setup utility to configure a RAID array. Skip this step and proceed to Section 4 if you do not want to create a RAID.

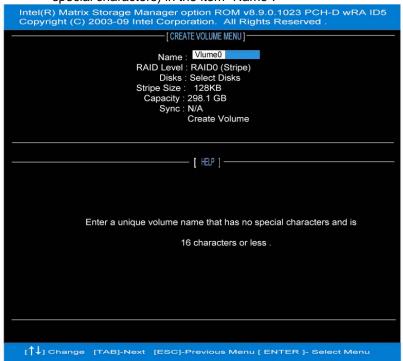
(3)-1 After the POST memory testing and before the operating system booting, a message "Press < Ctrl-l> to enter Configuration Utility" shows up, accordingly, press < CTRL+ l> to enter the RAID BIOS setup utility.



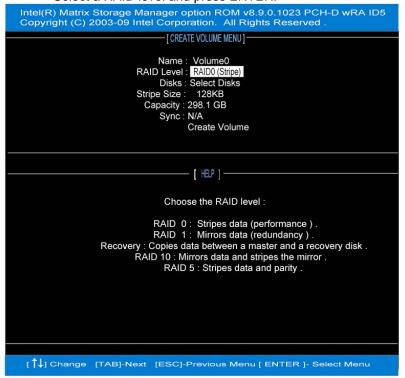
(3)-2 After you press <CTRL+ I>, the **Create RAID Volume** screen will appear. If you want to create a RAID array, select the **Create RAID Volume** option in the Main Menu and press ENTER.



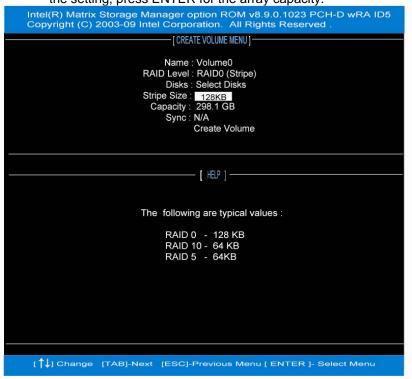
(3)-3-1 After entering the **CREATE VOLUME MENU** screen, you can type the disk array name with 1~16 letters (letters cannot be special characters) in the item "Name".



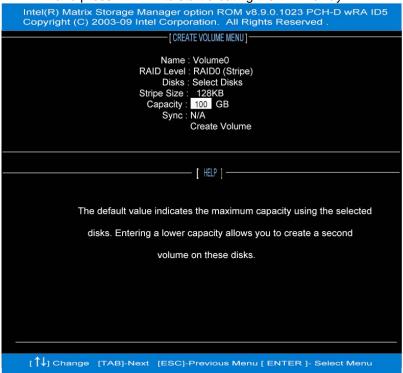
(3)-3-2 When finished, press ENTER to select a RAID level. There are three RAID levels, RAID0, RAID1 and RAID5 & RAID10. Select a RAID level and press ENTER.



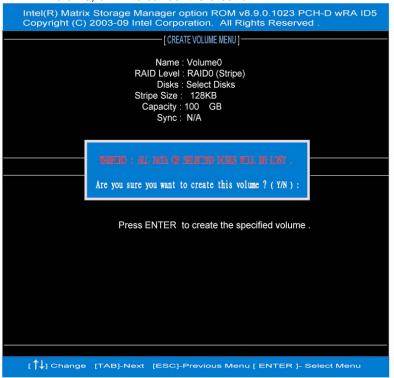
(3)-4 Set the stripe block size. The *KB* is the standard unit of stripe block size. The stripe block size can be 4KB to 128KB. After the setting, press ENTER for the array capacity.



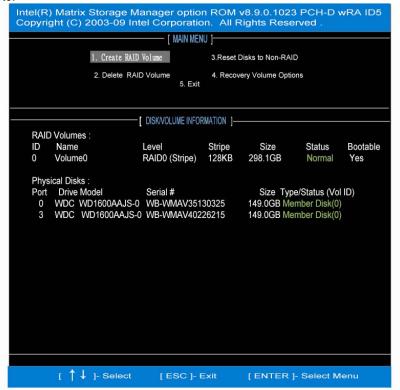
(3)-5 After setting all the items on the menu, select **Create Volume** and press ENTER to start creating the RAID array.



(3)-6 When prompting the confirmation, press "Y"to create this volume, or "N"to cancel the creation.

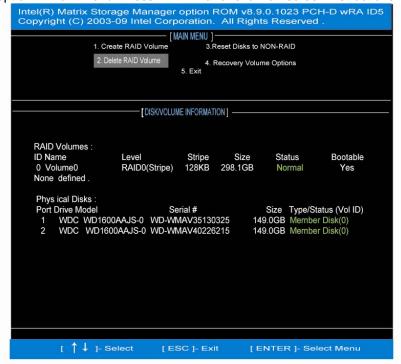


After the creation is completed, you can see detailed information about the RAID Array in the DISK/VOLUME INFORMATION section, including RAID mode, disk block size, disk name, and disk capacity, etc.



Delete RAID Volume

If you want to delete a RAID volume, select the **Delete RAID Volume** option in Main Menu. Press ENTER and follow on-screen instructions.



Please press [ESC] to exit the RAID BIOS utility.

Now, you can proceed to install a SATA driver controller and the operating system.

(4) Making a SATA Driver Disk

To install the operating system onto a serial ATA hard disk successfully, you need to install the SATA controller driver during the OS installation. Without the driver, the hard disk may not be recognized during the Windows setup process. First of all, please format a blank floppy disk. Secondly, follow up these steps below to produce a SATA driver disk.

Users can insert the Driver DVD and the formatted blank floppy disk in another system. And then, please copy all of file of the f6flpy32 folder in the Driver DVD to a floppy disk.



Please copy all of file of the f6flpy64 folder, if installing 64-bit Windows Operating System.

- **(5) Installing the SATA controller driver during the OS installation** Now, the SATA driver disk is ready, and BIOS settings configured, you can proceed to install Windows 2000/XP onto your SATA hard drive using the SATA driver. Here is an example for Windows XP installation.
- (5)-1 Restart your system to boot the Windows 2000/XP Setup disk, and press F6 button as soon as you see the message "Press F6 if you need to install a 3rd party SCSI or RAID driver". After pressing the F6 button, there will be a few moments for some files being loaded before next screen appears.



(5)-2 When you see the screen below, insert the floppy disk containing the SATA driver and press "S".

Windows Setup

Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage device(s):

<none>

- * To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Wiindows, including those for which you have a device support disk from a mass storage device manufacturer, press S.
- * If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.

(5)-3 If the Setup correctly recognizes the driver of the floppy disk, a controller menu will appear below. Use the ARROW keys to select Intel® ICH8R/ICH9R/ICH10R/DO/PCH SATA RAID Controller and press ENTER. Then it will begin to load the SATA driver from the floppy disk.



NOTE
If a message on the screen saying that one or some file(s) cannot be found, please check the floppy disk or copy the correct SATA driver again from the driver DVD.

APPENDIX D Intel® iAMT SETTINGS

The Intel[®] Active Management Technology (Intel[®] iAMT) has decreased a major barrier to IT efficiency that uses built-in platform capabilities and popular third-party management and security applications to allow IT a better discovering, healing, and protection their networked computing assets.

In order to utilize Intel[®] iAMT you must enter the ME BIOS (CTRL + P during system startup), change the ME BIOS password, and then select "Intel[®] iAMT" as the manageability feature.

D.1 Entering MEBx

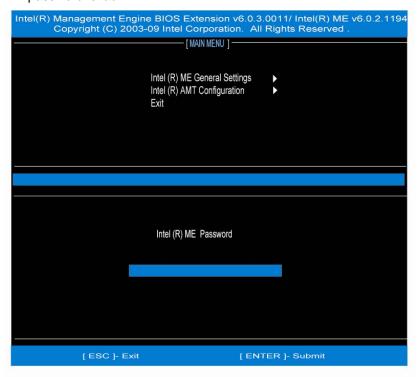
- 1. You must go to BIOS to enable $Intel^{\mathbb{B}}$ iAMT function.
- 2. Exit from BIOS after starting Intel[®] iAMT, and press Ctrl+P to enter MEBx Setting.

It is better to press Ctrl+P before the screen popping out.

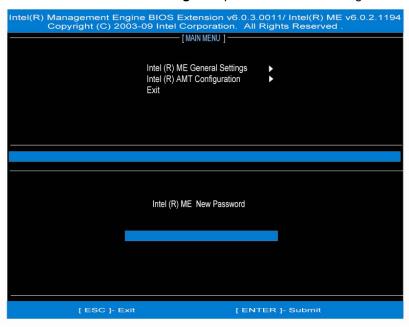


D.2 Set & Change Password

1. You will be asked to set a password when first log in. The default password is 'admin'.



2. You will be asked to change the password before setting ME.



3. You must confirm your new password while revising.

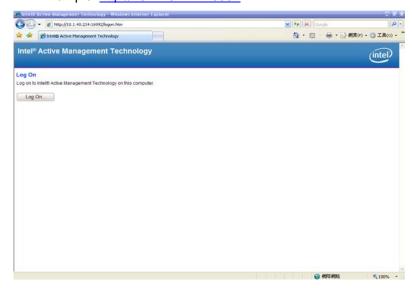
The new password must contain: (example:!!11qqQQ) (default value)

- Eight characters
- One upper case
- One lower case
- One number

Underline (_) and space are valid characters for password, but they won't make higher complexity.

D.3 Intel® iAMT Web Console

From a web browser, please type http://(IP ADDRESS):16992, which connects to Intel[®] iAMT Web.
 Example: http://10.1.40.214:16992



2. To log on, you will be required to type in username and password for access to the Web.

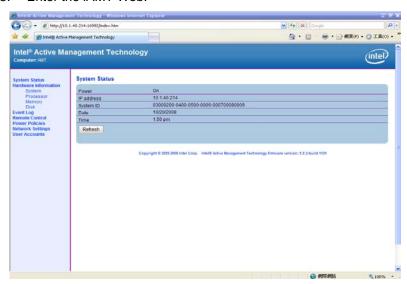
INTEL AMT Setting

USER: admin (default value)

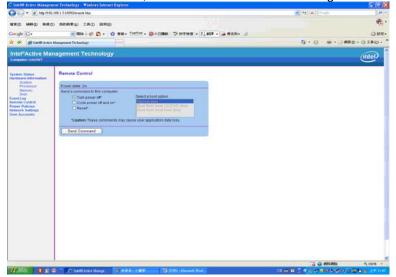
PASS: (MEBx password)

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3. Enter the iAMT Web.



4. Click Remote Control, and select commands on the right side.



5. When you have finished using the iAMT Web console, close the Web browser.